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PROBLEMS.

40. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

Find the market-price of $m=3\frac{1}{3}\%$ -stock, in order that it may yield $n=3\frac{1}{3}\%$ interest after deducting $d=\$2\frac{1}{6}$ from every $S=\$12$.

41. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

If I gain \$2 in \$5 by selling a horse for \$150, what per cent. would I gain by selling the horse for \$120?



ALGEBRA.

Conducted by J. M. OOLAW, Monterey, Va. All contributions to this department should be sent to him.

SOLUTIONS TO PROBLEMS.

26. Comment by WOOSTER W. BEMAN, A. M., Professor of Mathematics, University of Michigan, Ann Arbor, Michigan.

Referring to solution 1, of problem 26, p. 351 of MONTHLY:—In general, a , b , and c must be positive. The inequality $a^2b^2c^2 > (a+b-c)^2(b+c-a)^2$ $(c+a-b)^2$ is not a legitimate consequence of the three preceding inequalities, $a^2 > a^2 - (b-c)^2$, $b^2 > b^2 - (c-a)^2$, and $c^2 > c^2 - (a-b)^2$.

80. Proposed by C. A. ROBERTS, Long Bottom, Ohio.

Find the sum of $n=10$ terms of the series $1+15+55+134+265\dots$

Solution by H. C. WHITAKER, B. S., C. E., Professor of Mathematics, Manual Training School, Philadelphia, Pennsylvania; A. H. BELL, Hillsboro, Illinois; and P. S. BERG, Apple Creek, Ohio.

The first terms in the given series and in the successive orders of differences are 1, 14, 26, 13, 0; whence the sum

$$= n+14 \frac{n(n-1)}{1. 2} + 26 \frac{n(n-1)(n-2)}{1. 2. 3} + 13 \frac{n(n-1)(n-2)(n-3)}{1. 2. 3. 4} \\ = 10 + 630 + 3120 + 2730 = 6490.$$

Also solved by B. F. Burleson, D. G. Dorrance, J. F. W. Scheffer, G. B. M. Zerr, and the Proposer.

31. Proposed by D. G. DORRANCE, Camden, New York.

Sum the series 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc. to n terms. Also what is the n th term?